

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\begin{array}{cc} (x_1, y_1) & (x_2, y_2) \\ (-2, 5) & (6, 4) \end{array}$$

$$\frac{4-5}{6-(-2)} = \boxed{\frac{-1}{8}}$$

# Functions

A - NO

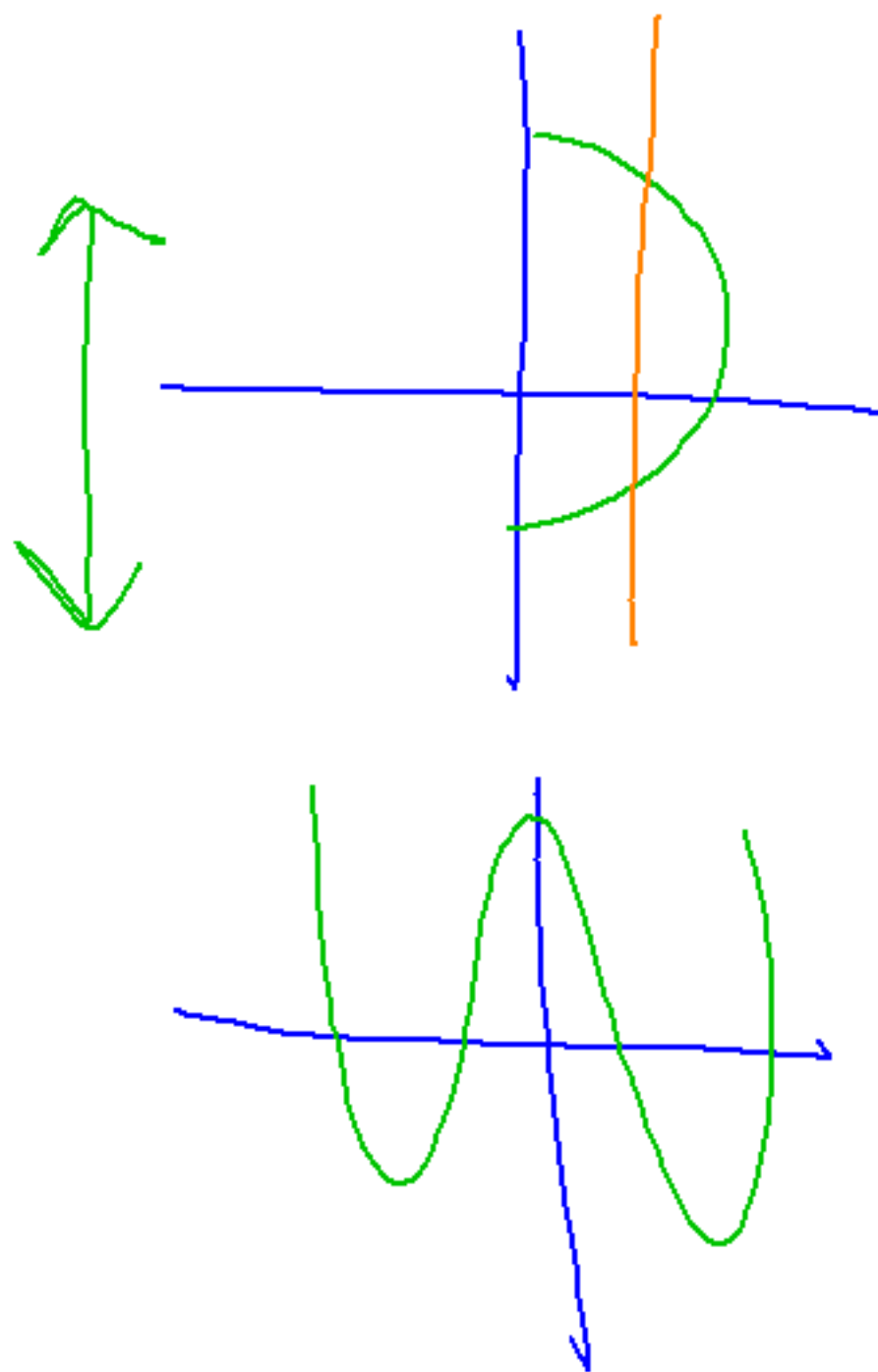
B - YES

C - YES

D - NO

E - NO

F - YES

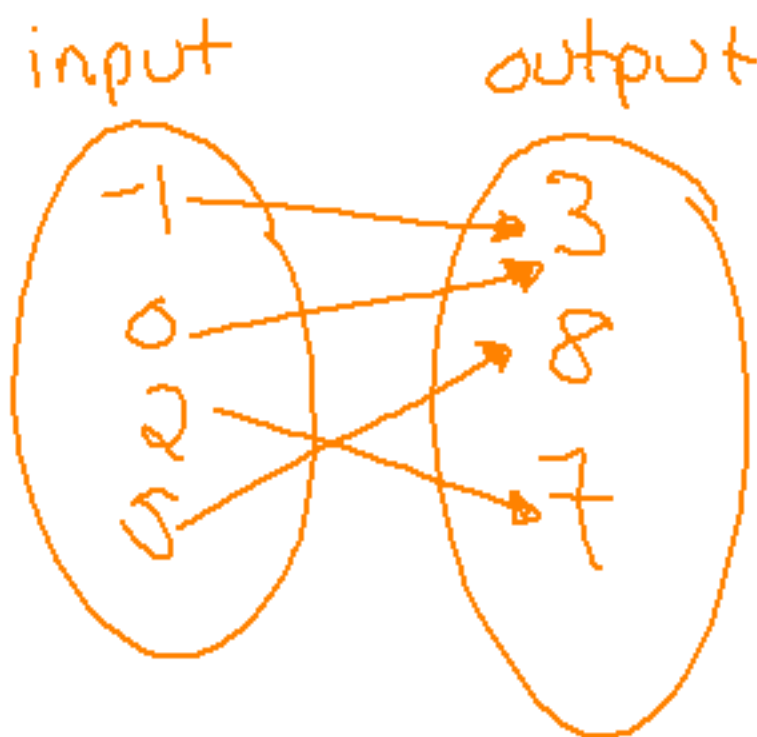


2.1

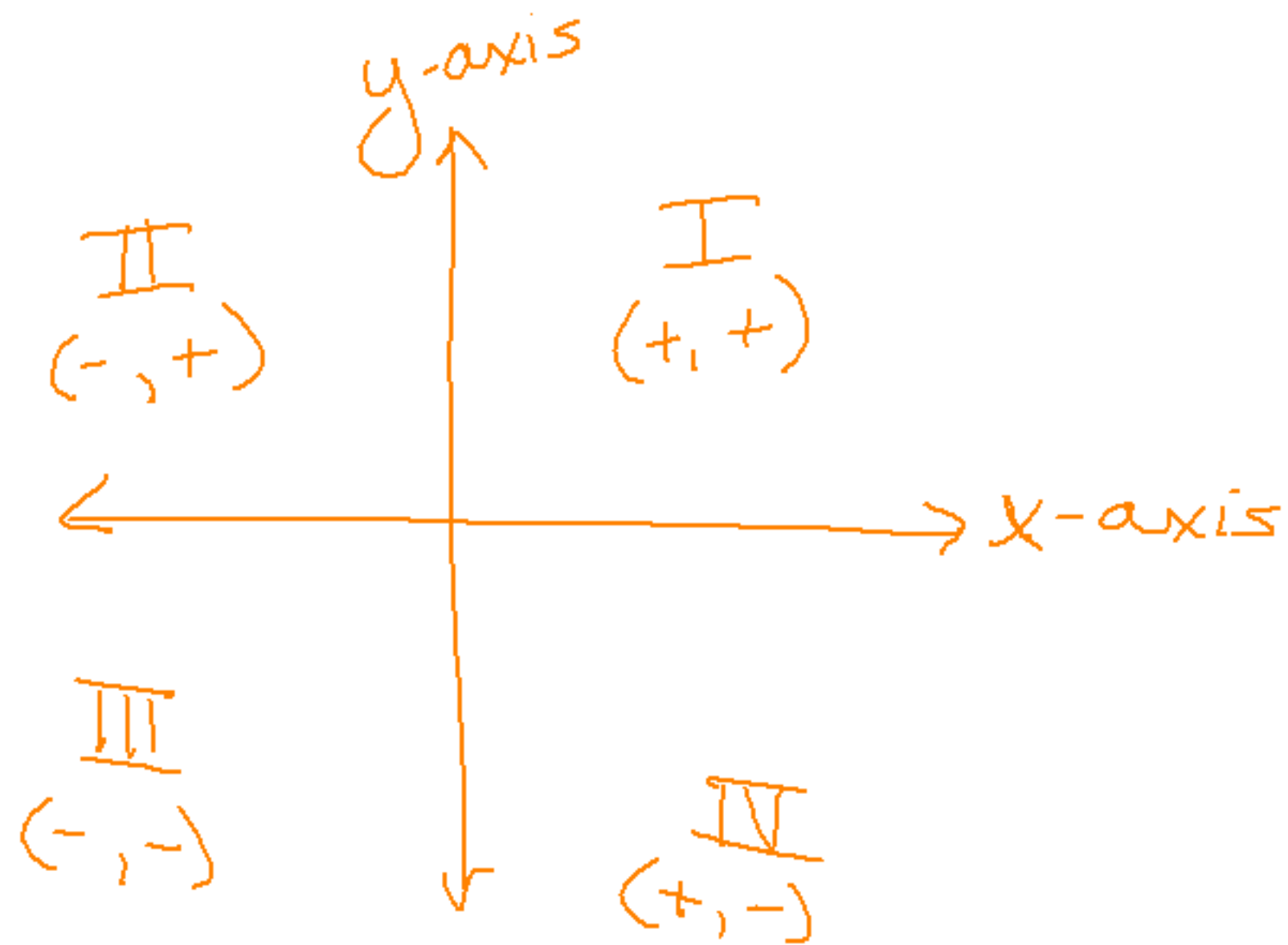
Relation - is a pairing, or mapping,  
of input values w/ output values.  
(x) (y)

Ex

1)  $\{(3, 2), (4, 5), (-1, 6)\}$



2)  $\{(4, 3), (5, 6), (3, 6), (4, 6)\}$



Domain -  
the set of  
input values  
(x)

Range -  
the set of  
output values  
(y)

Ex  
1)  $\{-1, 3, 4\}$   
2)  $\{-1, 0, 2, 5\}$   
3)  $\{3, 4, 5\}$

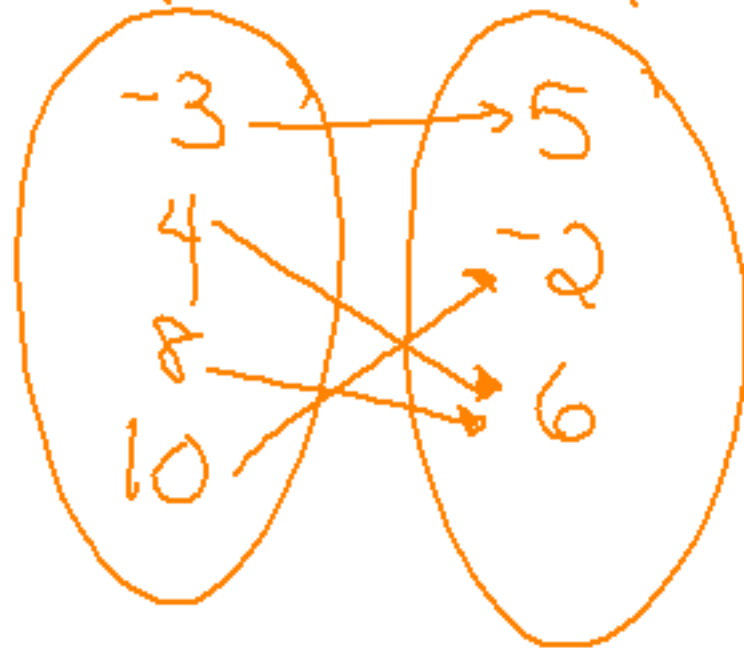
Ex  
 $\{2, 5, 6\}$   
 $\{3, 7, 8\}$   
 $\{-6, 3, 6\}$

No Function - a relation, where there is exactly one output for each input (one  $y$  for each  $x$ ).



\* can re-use  $y$ 's

Mapping Tech.  
input → output



Vert. Line Test

\* plot function on coord. plane

\* a vertical line can only pass thru one pt. @ any time

yes



no



①  $D = \{-3, 1, 3, 4\}$

$R = \{-2, 1, 3\}$

Fctn.

mapping

②  $D = \{-3, 1, 4\}$

$R = \{-2, 1, 3, 4\}$

Relation

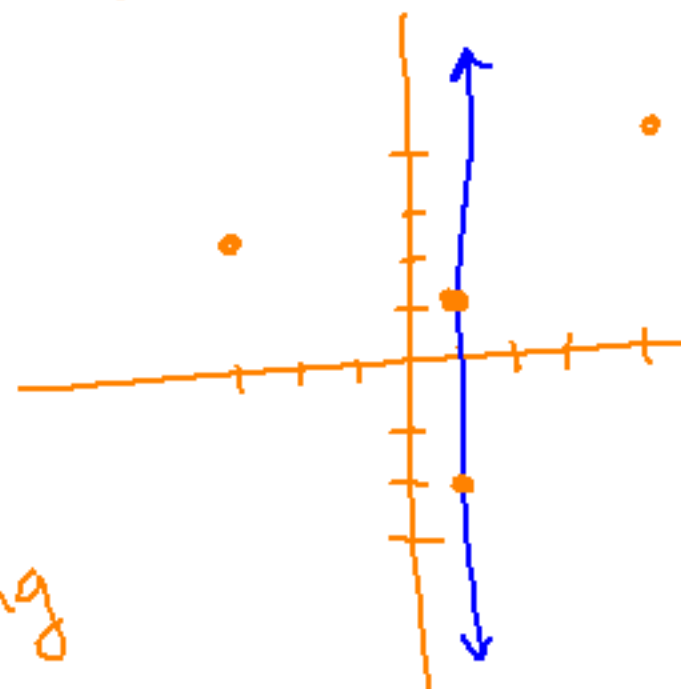
mapping

③  $D = \{-3, 1, 4\}$

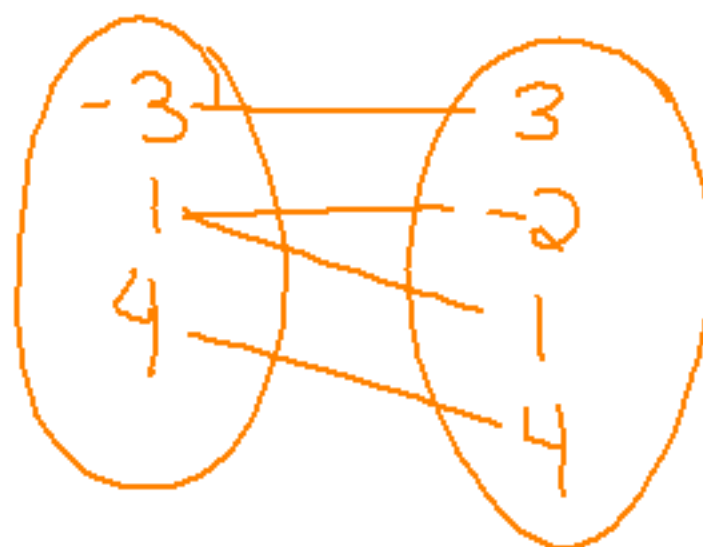
$R = \{-2, 1, 3, 4\}$

Relation

vert. line test



mapping





$$\textcircled{4} D = \{-3, 1, 3, 4\}$$

$$R = \{-2, 1, 3\}$$

Fctn

# Linear Fctns

$$y = mx + b$$

$m, b$  are constants

$\uparrow$  slope  $\uparrow$  y-intercept

$$\frac{\Delta y}{\Delta x}$$

$f(x) = mx + b$      $f$  of  $x$

$g(x)$      $h(t)$   
 $y(x)$

the value of  $f$  @  $x$ .

$f(2)$  = put 2 in for every  $x$  in the eqn.  
& evaluate

Ex:  $f(x) = 3x - 5$

Find  $f(4)$

$$3(4) - 5 = \textcircled{7}$$

$$g(2)$$

$$y(8)$$

Ex  
①

$$f(x) = -x^2 - 3x + 5$$

-non-linear

$$f(2) = -(2^2) - 3(2) + 5$$

$$-4 - 6 + 5$$

$$-10 + 5$$

$$\textcircled{-5}$$



② linear

$$g(-4) = 2(-4) + 6 \\ = -2$$

③ linear

$$= \frac{1}{2}(8) - 3(8) + 4 \\ = -16$$

$$x=8$$

$$\sqrt[3]{x} = x^{1/3}$$

④ non-linear

$$= \sqrt{121} - 4 \\ = 7$$

$$x=121$$

$$y = \sqrt{x} - 4 \\ x^{1/2}$$

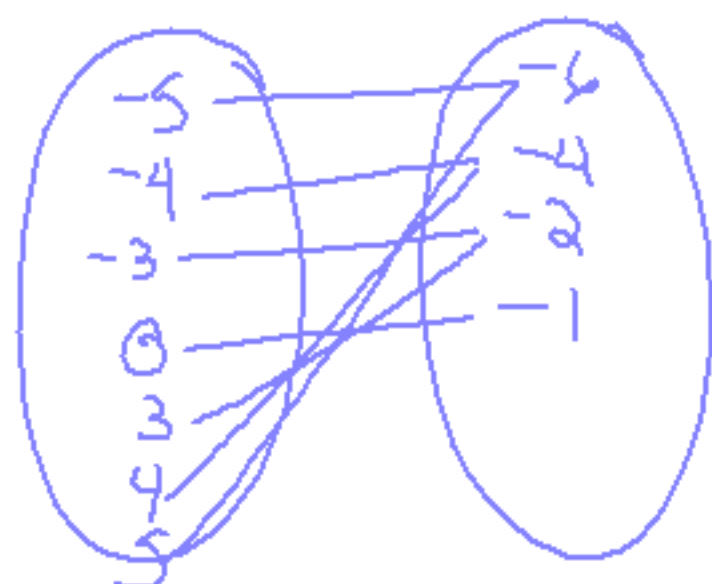
$$1a) D = \{-1, 2, 5, 6\}$$

$$R = \{-2, 3\}$$

$$2a) D = \{1, 2, 3, 4\}$$

$$R = \{1, 2, 3, 4\}$$

23)



fctn

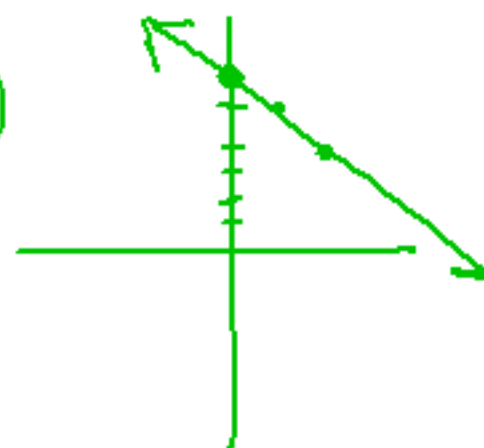
25) relation

27) fctn.

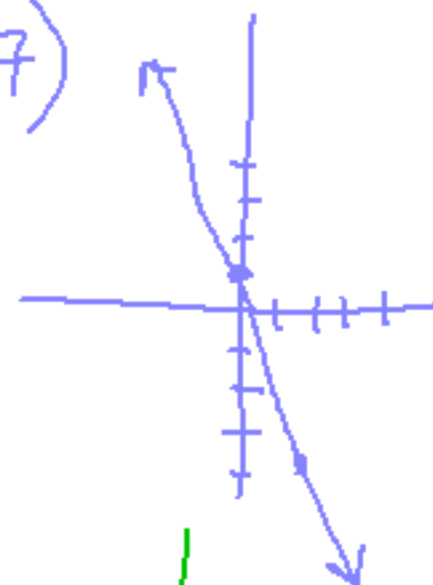
31) relation

33) \* use vertical line test, graph!

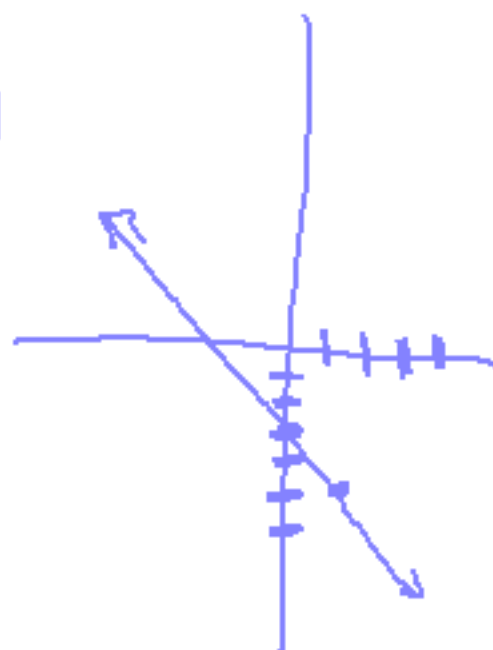
35)



37)



39)



41)

